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(54) Method of molding a toilet seat assembly

(57) A toilet seat assembly **10** includes a toilet seat **12** having a seat skin **14** defining the exterior surfaces thereof and a seat core **16** disposed within and surrounded by the seat skin **14** and a cover **18** having a cover skin **20** defining the exterior surfaces thereof and a cover core **22** disposed within and surrounded by the cover skin **20**. The assembly is characterized by the cores **16**, **22** each comprising a waste material. The waste material may be a single polymer wasted in the process of making other products. Alternatively or in combination therewith, combining a plurality of different materials (including different polymers) from different sources may be employed to formulate the waste material.

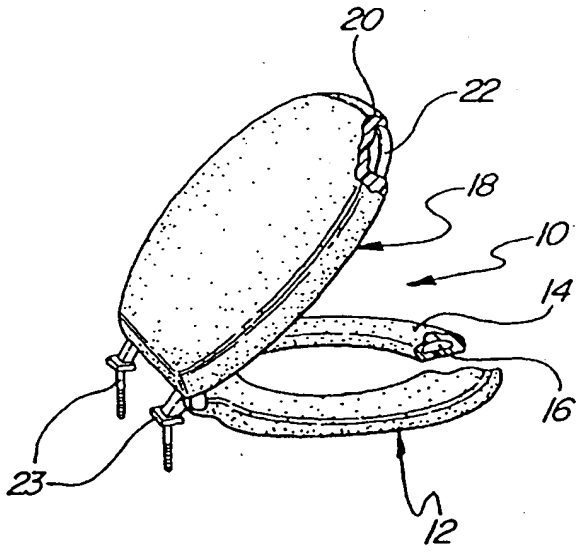

FIG-1

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The subject invention relates to a toilet seat assembly including a seat and a cover and, more specifically, to molded toilet seat assemblies.

Description of the Prior Art

[0002] Toilet seat assemblies include a seat and cover coupled together by a hinge mechanism that also connects the assembly to a toilet. These toilet seat assemblies have been fabricated from materials such as wood and plastic, some with a solid core surrounded by polymer material. Examples of such prior art techniques are disclosed in the U.S. Patents 3,863,277 to Harrison; 3,988,789 to Blount; 5,991,935 to Wang and 6,154,892 to Hogue.

[0003] In all prior systems there has been the continuing objective to reduce the cost of fabricating the toilet seat assemblies.

SUMMARY OF THE INVENTION AND ADVANTAGES

[0004] It is, therefore, an object of the subject invention to produce a toilet seat assembly at a reduced cost. This is accomplished by a method of molding a toilet seat and cover comprising the steps of forming a seat having a seat core surrounded by a seat skin, and forming a cover having a cover core surrounded by a cover skin. The method is characterized by forming the cores of a waste material.

[0005] The waste material may be collected from the processes for making other products and mixed into a flowable material that solidifies into the cores. By accumulating and using such waste materials, the cost of the assembly is greatly reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Other advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0007] Figure 1 is a perspective view of a toilet seat assembly formed in accordance with the subject invention;

[0008] Figure 2 is a mold for molding the toilet seat assembly of he subject invention; and

[0009] Figure 3 is a schematic view of the method of the subject invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0010] Referring to the Figures, wherein like numerals indicate like or corresponding parts throughout the several views, a toilet seat assembly fabricated in accordance with the subject invention is generally shown at **10** in Figure 1. The toilet seat assembly **10** includes a toilet seat, generally indicated at **12**, having a seat skin **14** defining the exterior surfaces thereof and a seat core **16** disposed within and surrounded by the seat skin **14**. The assembly **10** similarly includes a cover, generally indicated at **18**, including a cover skin **20** defining the exterior surfaces thereof and a cover core **22** disposed within and surrounded by the cover skin **20**. Appropriate and well known hardware **23** hingedly interconnect the seat **12** and cover **18** and mount the assembly **10** on a water closet or toilet.

[0011] The assembly is characterized by the cores **16, 22** each comprising a waste material. The waste material may be a single polymer wasted in the process of making other products. Alternatively or in combination therewith, combining a plurality of different materials (including different polymers) from different sources may be employed to formulate the waste material.

[0012] The method of fabricating the toilet seat **12** and the cover **18** comprises the known steps of forming the seat **12** having a seat core **16** surrounded by a seat skin **14** and forming the cover **18** having a cover core **22** surrounded by a cover skin **20**, but is characterized by forming the cores **16, 22** of a waste material. As illustrated in Figure 2, this may be accomplished by simultaneously injecting the polymer for the seat skin **14** into a seat mold cavity **24** and into a cover mold cavity **26**, both of which are defined by a mold comprising the mold bottom **28** and mold top **30**. Although the top **30** is shown perpendicular to the bottom **28**, the two parts are disposed in parallel planes when in use and are opened and closed in the manner well known in the art. The seat **12** and cover **18** molding the seat **12** and cover **18** are molded in the same mold **28, 30** having an interconnecting gate defined by grooves **32** and **34** in the respective mold halves **28** and **30** and interconnecting the seat and cover mold cavities **24** and **26**.

[0013] The method is perfected by injecting a waste material into the seat mold cavity **24** and into the cover mold cavity **26** to fill the skin polymer. Actually, the polymer material for the skin is co-injected with the waste material into the mold cavities **24, 26**. This may be accomplished by injecting the waste material in a tube **34** concentrically within a cylinder **32** of the skin polymer, i. e., a jet within a jet. A plurality of such injectors may be disposed about the mold halve **28.** The waste material could include a mixture of waste polymers from different sources, such as other injection processes making other parts. Often products molded from polymers have imperfections and must be discarded. These discarded scarp products can be ground up into granules that can

be mixed with granules from other scrap products to provide the waste material. In other words, the method may be further defined as collecting solidified polymers from molding processes for products other than toilet seat assemblies, dividing the solidified polymers into a granular mix, heating the granular mix into a flowable mix, and injecting a waste material including the flowable mix. In some cases the waste material may include particles of wood. As shown in Figure 3, the waste may also include recyclable materials, or even paper.

[0014] Obviously, many modifications and variations of the present invention are possible in light of the above teachings. The invention may be practiced otherwise than as specifically described within the scope of the appended claims, wherein that which is prior art is antecedent to the novelty set forth in the "characterized by" clause. The novelty is meant to be particularly and distinctly recited in the "characterized by" clause whereas the antecedent recitations merely set forth the old and well-known combination in which the invention resides. These antecedent recitations should be interpreted to cover any combination in which the incentive novelty exercises its utility. In addition, the reference numerals in the claims are merely for convenience and are not to be read in any way as limiting.

Claims

1. A method of fabricating a toilet seat **(12)** and cover **(18)** comprising the steps of;
   forming a seat **(12)** having a seat core **(16)** surrounded by a seat skin **(14)**,
   forming a cover **(18)** having a cover core **(22)** surrounded by a cover skin **(20)**,
   said method **characterized by** forming said cores **(16, 22)** of a waste material.

2. A method as set forth in claim 1 further defined as combining a plurality of different materials from different sources to formulate the waste material.

3. A method of molding a toilet seat **(12)** and cover **(18)** comprising the steps of;
   injecting a skin polymer into a seat mold cavity **(24)** and into a cover mold cavity **(26)**, and
   injecting a waste material into the seat mold cavity **(24)** and into the cover mold cavity **(26)** to fill the skin polymer.

4. A method as set forth in claim 1 further defined as injecting a waste material including a mixture of waste polymers from different sources.

5. A method as set forth in claim 1 further defined as injecting a waste material including particles of wood.

6. A method as set forth in claim 1 further defined as collecting solidified polymers from molding processes for products other than toilet seat assemblies, dividing the solidified polymers into a granular mix, heating the granular mix into a flowable mix, and injecting a waste material including the flowable mix.

7. A method as set forth in claim 4 including the step of molding the seat **(12)** and cover **(18)** in the same mold having a gate **(32, 34)** interconnecting the seat and cover mold cavities.

8. A toilet seat assembly comprising;
   a toilet seat **(12)** including a skin defining the exterior surfaces and a core disposed within and surrounded by said seat skin **(14)**,
   a cover **(18)** including a cover skin **(20)** defining the exterior surfaces thereof and a cover core **(22)** disposed within and surrounded by said cover skin **(20)**,
   said assembly **characterized by** said cores **(16, 22)** each comprising a waste material.

9. An assembly as set forth in claim 10 wherein said skins comprise a polymer and said waste material includes a mixture of different waste polymers.

10. An assembly as set forth in claim 10 wherein said waste material includes particles of wood.

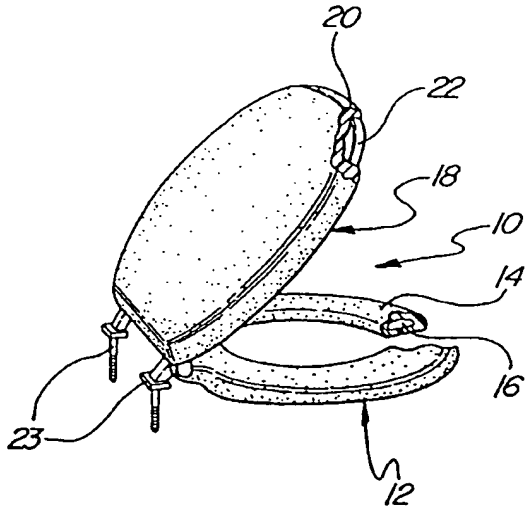

FIG-1

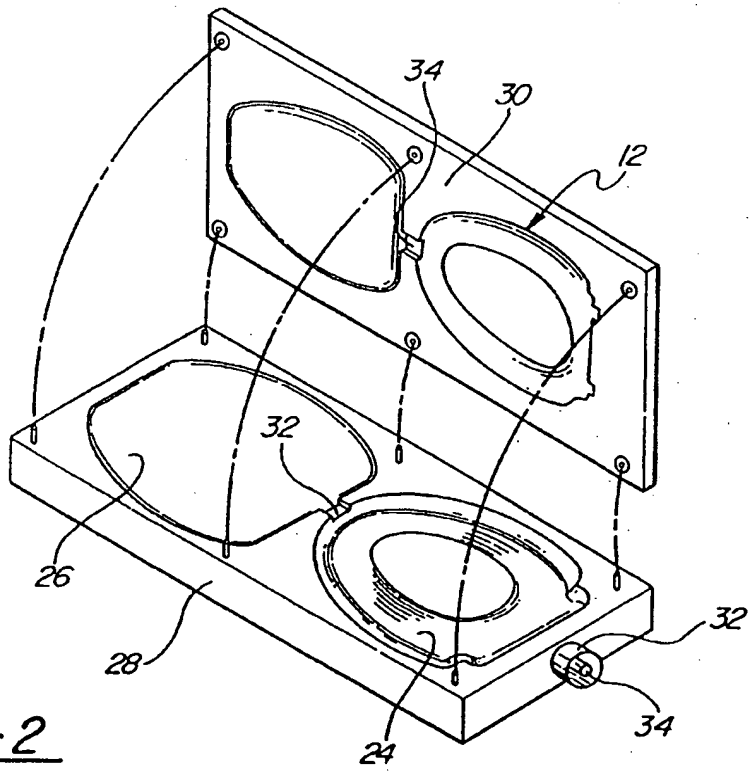

FIG-2

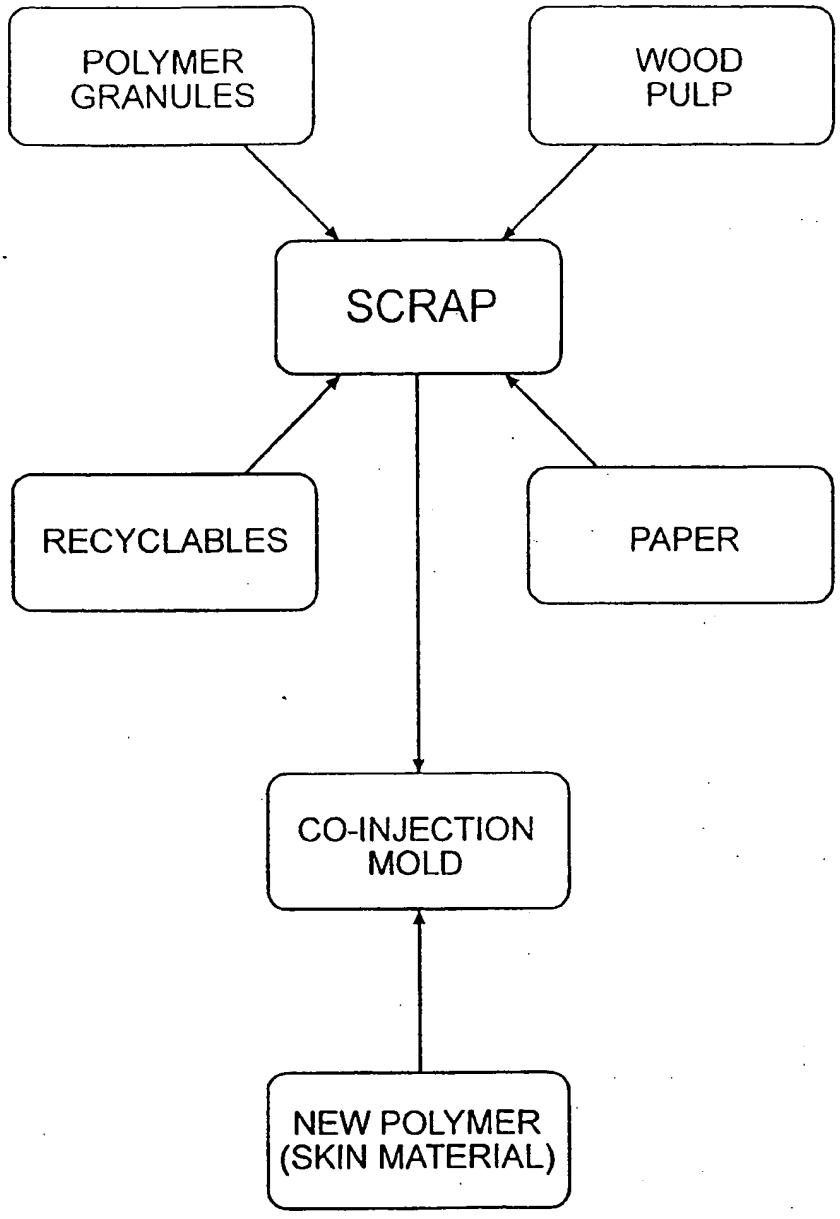
POLYMER GRANULES
WOOD PULP
SCRAP
RECYCLABLES
PAPER
CO-INJECTION MOLD
NEW POLYMER (SKIN MATERIAL)

FIG - 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 07 5625

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DATABASE WPI Section Ch, Week 200169 Derwent Publications Ltd., London, GB; Class A32, AN 2001-605765 XP002236373 -& JP 2001 225353 A (TOTO LTD), 21 August 2001 (2001-08-21)	1-4,6,8,9	B29C45/16 A47K13/02
Y	* paragraph '0023! * * paragraph '0026! * * figures 1-4 *	7	
X	DE 197 30 330 A (HAMBERGER INDUSTRIEWERKE GMBH) 21 January 1999 (1999-01-21) * page 2, line 31 - page 2, line 35 * * page 4, line 52 - page 4, line 54 *	1,5,8,10	
Y	GB 1 428 765 A (RAGOT C) 17 March 1976 (1976-03-17) * claim 7 *	7	
X	EP 0 673 743 A (KRAUSS MAFFEI AG) 27 September 1995 (1995-09-27) * page 2, line 28 - page 2, line 37 *	1,8	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B29C A47K
A	EP 1 013 386 A (ELMA CHEMICALS S R L) 28 June 2000 (2000-06-28) * column 3, line 7 - column 3, line 34 *	1,3,8	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	28 March 2003	Zattoni, F

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 07 5625

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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28-03-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2001225353 A	21-08-2001	NONE	
DE 19730330 A	21-01-1999	DE 19730330 A1	21-01-1999
GB 1428765 A	17-03-1976	FR 2173379 A5	05-10-1973
		BE 795701 A1	18-06-1973
		DE 2308395 A1	30-08-1973
		ES 411851 A1	01-05-1976
		IT 983468 B	31-10-1974
		NL 7302249 A	24-08-1973
EP 0673743 A	27-09-1995	DE 4408426 A1	14-09-1995
		EP 0673743 A1	27-09-1995
EP 1013386 A	28-06-2000	IT 1303387 B1	06-11-2000
		AT 223289 T	15-09-2002
		BR 9901253 A	05-09-2000
		CA 2268674 C	04-12-2001
		DE 69902741 D1	10-10-2002
		DE 69902741 T2	09-01-2003
		EP 1013386 A1	28-06-2000
		NL 1013868 A1	23-06-2000
		US 2002150718 A1	17-10-2002
		US 2002031654 A1	14-03-2002

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82